

***SmartNest***

**SmartNest™ Installation and Quick Start Guide**

## **COPYRIGHTS**

© 2011 Wuhan Zhige Software, Co.,Ltd. All rights reserved.

Information in this document is subject to change without notice. The software described in this document is furnished under a license agreement or nondisclosure agreement. The software may be used or copied only in accordance with the terms of those agreements. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or any means electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Zhige Software, Co.,Ltd.

Zhige Software, Co.,Ltd.

B-2503 Valley Times Square, Guanshan Street,  
Wuhan City, Hubei Province, P.R.China,430074

<http://www.smartnest.com.cn>

E-mail: [smartnest@163.com](mailto:smartnest@163.com)

Tel: 0086-27-87778672,87490006

Fax: 0086-27-87778672

## **TRADEMARKS**

SmartNest is a registered trademark of Zhige Software, Co.,Ltd. in P.R.China and/or other countries. Microsoft, Windows, and Internet Explorer are registered trademarks of Microsoft Corporation in the United States and/or other countries. Adobe and Adobe Reader are registered trademarks of Adobe Systems Incorporated in the United States and/or other countries. AutoCAD is a registered trademark of Autodesk Incorporated in the United States and/or other countries.

## SmartNest Installation and Quick Start Guide

### In this guide...

SmartNest Installation Guide.....	4
System requirements .....	4
Installing SmartNest.....	5
Opening and closing SmartNest.....	6
SmartNest Quick Start Guide.....	7
Main SmartNest window.....	7
Starting a new job.....	8
Adding parts to your part list.....	9
Automatic and interactive nesting.....	11
Modifying the nest.....	12
Deleting a nest.....	14
Automatic generation of cutting path.....	15
Modifying cutting path.....	17
Cut simulation.....	19
Saving and opening jobs.....	20
Output.....	21
Report.....	22
Setting.....	23
Contacting Zhige Software, Co.,Ltd.....	33

This guide performs two functions. The first half is an installation guide. It helps you install and start the latest version of SmartNest. It also provides information about system requirements, program authorization, and how to contact Zhige Software, Co.,Ltd. The second half of the guide starts in the last chapter, called "SmartNest Quick Start Guide." The purpose of the quick start guide is to walk you through many of the important tasks in SmartNest. By following the steps presented in this guide, you will get a basic understanding of how to use SmartNest.

# SmartNest Installation Guide

## System requirements

### Software

- Windows 2000 (with service pack 4) or later
- AutoCAD\*

### Hardware

- 1 GHz processor or faster (3 GHz recommended)
- 512 MB RAM (1 GB recommended)
- VGA display with at least 256 colors and a resolution of 1024 x 768
- 200 MB available disk space

**Note:** AutoCAD 2000 or later is recommended for editing part graphics (.dxf/.dwg) for nesting.

## Installing SmartNest

### To install SmartNest:

- 1 Close all programs.
- 2 Insert the CD labeled SmartNest into your CD-ROM drive.
- 3 Run setup.exe.
- 4 Follow the instructions on the screen to complete the installation.

By default, SmartNest is installed in the following location:

**C:\Program Files\SmartNest4**

### Note:

Before installing SmartNest, be sure that you have logged in as the system administrator. Otherwise, SmartNest cannot install properly.

## Opening and closing SmartNest

After you install the program, the SmartNest icon is displayed on your desktop.

### To open SmartNest:

- ▶ From your desktop, double-click the **SmartNest** icon.

### To close SmartNest:

- ▶ Click in the upper-right corner of the main SmartNest window.

## SmartNest Quick Start Guide

Even though SmartNest was designed with ease of use in mind, it can still be intimidating at first glance. This guide should give you a good understanding of the basic functions of SmartNest.

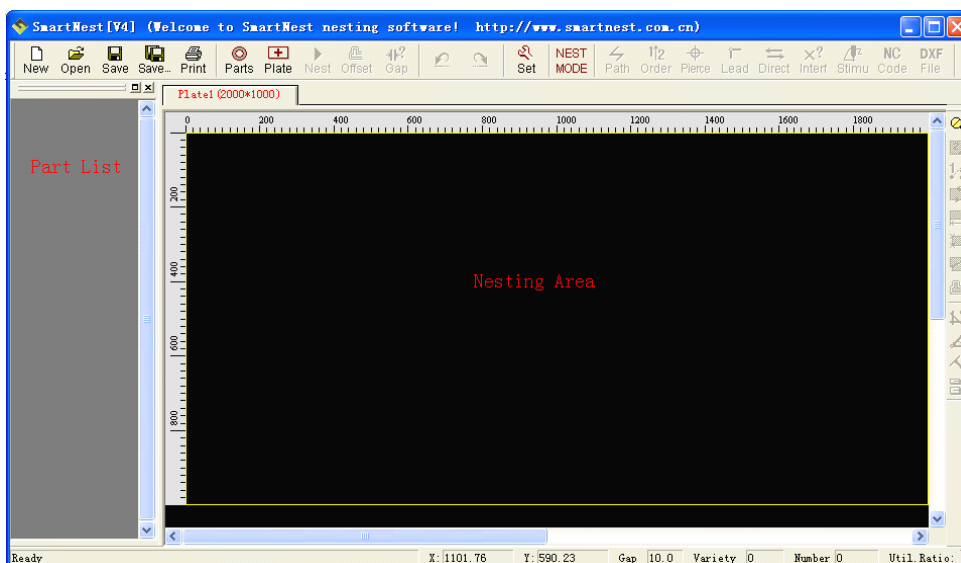
### This guide will walk you through the following tasks:

- Opening, saving, and starting new jobs
- Adding parts to your part list
- Nesting (interactive and automatic)
- Generating cutting path
- Cut simulation
- Generating outputs and reports

## Main SmartNest window

When you launch SmartNest, the main window will appear. It is divided into three sections: toolbars, Part List and the nesting area.

- ▶ The top section of the main window contains the main toolbar (New, Open, Save...). This toolbar will be used throughout this guide to perform specific tasks.
- ▶ The left-hand side of the main window is the auxiliary toolbar used for showing, measuring and inquiring.
- ▶ The status bar along the bottom of the main window is also considered part of the toolbars.
- ▶ The left-hand side of the main window is occupied by tool window: the Part List. When SmartNest is started normally, the Part List will not contain any parts.
- ▶ The remaining area of the main window is devoted to nesting. On startup, SmartNest will automatically display the dimensions top-left of the default plate.



## Starting a new job

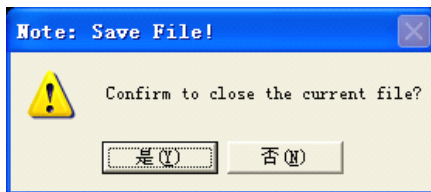
When SmartNest is started, a new job is automatically created for you. For the purposes of this guide, we will discard this job and create a new one.

### To create a new job:

1 On the main toolbar, click "New" button.



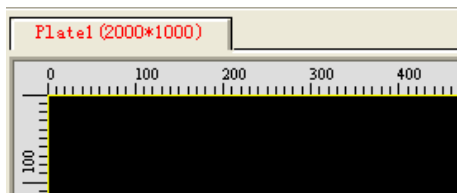
2 A message box will appear as follows. The current job will be closed when starting a new job, so you should pay attention to saving file.



3 An untitled new job (nesting file) will appear at the main window title of SmartNest.



4 A new plate (Plate 1) with its size (as setting in advance) will appear as follows. The plate size can be modified by double-click the plate label area.



### Note:


The current job will be closed when starting a new job. Adding parts to your part list will usually be the first step after creating a new job.

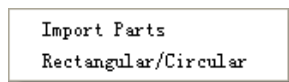


## Adding parts to your part list

This section of the guide will show how to add parts to your part list.

1 Move mouse cursor in the Part List area, right-click, a popup menu will appear: (or click

the "Parts" button  in the main toolbar)

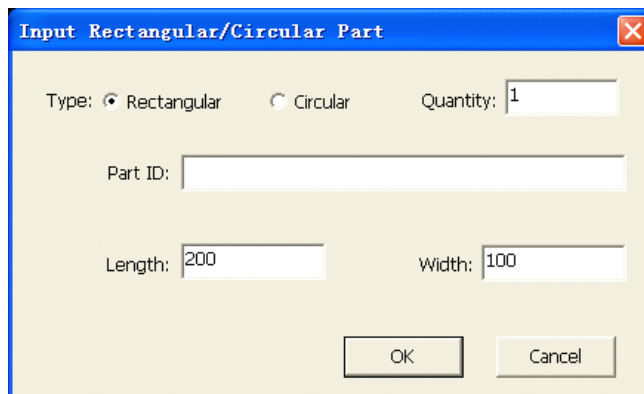


2 Select "Import Parts" for CAD files (.dxf/.dwg) or "Rectangular/Circular" for rectangular parts and circular parts (circle or ring).

2.1 When importing CAD files, a file dialog will appear and dxf/dwg files can be multi-selected.

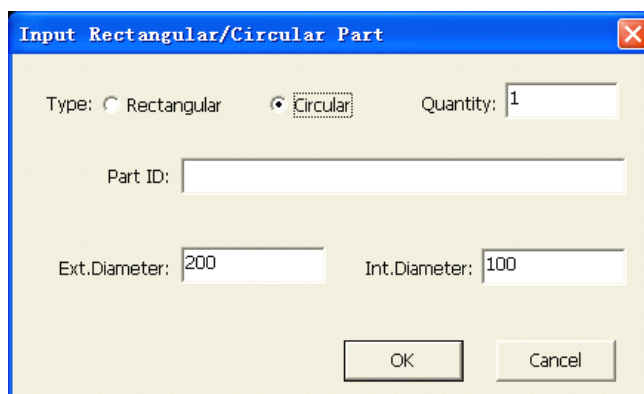
2.2 When importing rectangular/circular parts, the following dialog will appear.

For a rectangular part, the length and width should be given:

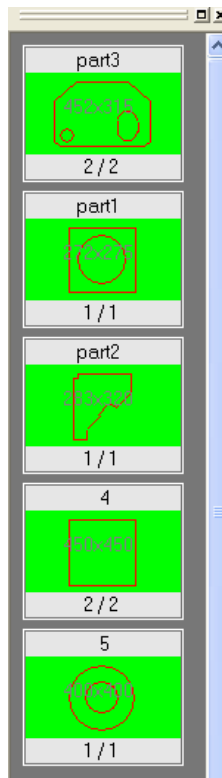


The dialog box is titled "Input Rectangular/Circular Part". It has a blue title bar with a close button. The main area is light beige. At the top, there are two radio buttons: "Rectangular" (selected) and "Circular". To the right is a "Quantity:" label followed by a text box containing the number "1". Below this is a "Part ID:" label followed by an empty text box. Further down are two text boxes: "Length:" with the value "200" and "Width:" with the value "100". At the bottom are two buttons: "OK" and "Cancel".

For a circular part, the exterior diameter and interior diameter should be input. When the interior diameter is 0, the imported part will be a circle, otherwise ring.



The dialog box is titled "Input Rectangular/Circular Part". It has a blue title bar with a close button. The main area is light beige. At the top, there are two radio buttons: "Rectangular" and "Circular" (selected). To the right is a "Quantity:" label followed by a text box containing the number "1". Below this is a "Part ID:" label followed by an empty text box. Further down are two text boxes: "Ext.Diameter:" with the value "200" and "Int.Diameter:" with the value "100". At the bottom are two buttons: "OK" and "Cancel".



3 The imported parts will appear in the Part List area.

Each part contains three areas. The top area shows the part ID, the middle area shows the graphics with its size and the bottom area shows the available/total quantities for nesting.

The background color of part graphics indicates different status of the part in the current job.

- Green: available for nesting (available quantity larger than 0)
- Gray: unavailable for nesting (available quantity equal to 0)
- Red: exceeding the total quantity planned for nesting (available quantity less than 0)

#### Notes:

##### Part Import Setting

The part import setting should be defined properly in advance so as to import CAD files correctly.

##### Sample CAD files

During installation of SmartNest, some sample CAD (.dxf/.dwg) files were placed into the following folders:

C:\Program Files\SmartNest4\DXF (.dxf files for cutting)

C:\Program Files\SmartNest4\DWG (.dwg files for cutting)

C:\Program Files\SmartNest4\draw (3 .dxf/.dwg files including drawing layes)

Feel free to use these files as you learn SmartNest.


## Automatic and interactive nesting

At this point you have learned how to start a new job and then how to add parts to your part list. With a couple of parts in the Part List and an empty nest in the nesting area, you are now ready for nesting.

### Parts can be nested in two different ways:

■ **Interactive nesting:** Parts are added one at a time dragging from the Part List. Nested parts are positioned manually by moving, rotating and copying them. SmartNest allows you turn automatic nesting from interactive whenever you want.

■ **Automatic nesting:** SmartNest calculates the position of all parts in the Part List, considering those have been nested in the current plate, and then nests them in the current plate. If the current plate is not big enough to nest all parts, the rest parts will be

kept in the Part List. You can add a new plate via click "Plate" button  then continue nesting.

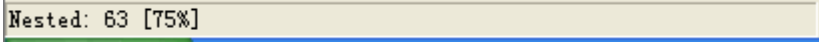
### To interactively add parts to the nest:

- ▶ Drag a part from the Part List onto the nest.

### To automatically add parts to the nest:

- ▶ Click the "Nest" button  in the main toolbar.

In the status bar, the nesting progress will be showed dynamically as follows.



Nested: 63 [75%]

### Notes:

The automatic nesting strategy can be set in advance in the Auto-Nesting Setting.

## **Modifying the nest**

Once you have added parts to the nest, you are free to modify the nest in any way. You can delete parts from the nest, add more parts, rotate and move parts around, and perform more advanced functions such as mirroring and array copying. This section of the guide will showcase several ways of working with parts on a nest.

### **Selecting parts**

Nested parts cannot be moved or rotated until they are selected.

#### **To select a single part:**

- ▶ Click anywhere inside the part.

#### **To select multiple parts one by one:**

- ▶ Continue clicking each part.

#### **To select multiple parts within an area (area-select):**

- ▶ In the popup menu (by right-click), click "Select By Window", then drag a rectangular area to surround the parts that should be selected. As you drag, the selection area will be drawn as a box with dotted lines. Those parts completely enclosed in the rectangular area will be selected.

#### **To select all parts on the nest:**

- ▶ In the pop menu (by right-click), click "Select All".

#### **Note:**

When a part (or group of parts) is selected, it will turn red with dotted lines. **If a part is selected twice, it will return to unselected.**

### **Removing parts from the nest**

Nested parts can be removed from the nest, returning them to the part list. This causes their available quantities to rise.

#### **To remove selected parts from the nest:**

- ▶ Press DELETE key.

### **Moving and rotating selected parts**

Once parts are selected, they can be moved and rotated into any position.

#### **To move/rotate selected parts by mouse:**

- ▶ Right-click, designate a base point, move mouse to drag parts from one location on the nest to another. The parts will rotate if the mouse wheel rotated meanwhile mouse moving.

**To move selected parts by hotkeys (Smart Move):**

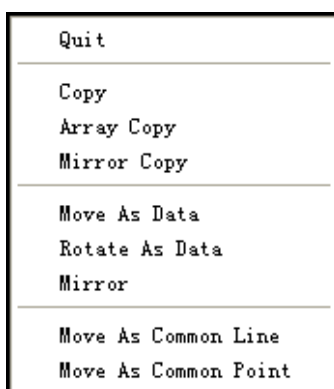
- ▶ Press LEFT ARROW key to move parts automatically as left as possible.
- ▶ Press RIGHT ARROW key to move parts automatically as right as possible.
- ▶ Press UP ARROW key to move parts automatically as up as possible.
- ▶ Press DOWN ARROW key to move parts automatically as down as possible.

**Note:**

Smart Move Type should be set in the Other Setting in advance (or press TAB key to witch).

**More operations for selected parts...**

- ▶ Right-click to popup menu as follows to reach more operations for selected parts.

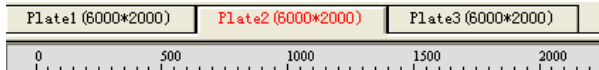


## Deleting a nest

Deleting a nest will place all of its parts back in the Part List, adjusting their quantities appropriately.

### To delete a nest:

- 1 Right-click in the label area of the nest (plate), the selected nest's label (plate size) will be show in red text.



- 2 A message box will appear as follows. Click "OK" to delete the nest. All parts in the withdrawn nest will return to Part List.



### Note:

SmartNest always has a current nest – even if you delete all nests or if you delete the only nest in the job.

## Automatic generation of cutting path

At this point you have learned how to start and modify a nesting on a plate, aiming at the imported parts in your Part List. When the nest is settled down, you are now ready for generating cutting path.

### SmartNest works in two modes:

**Nest Mode** for nesting and **Cut Mode** for cutting path. At this point, you have been working in nest mode. Now you need to switch to cut mode in order to generate cutting path.

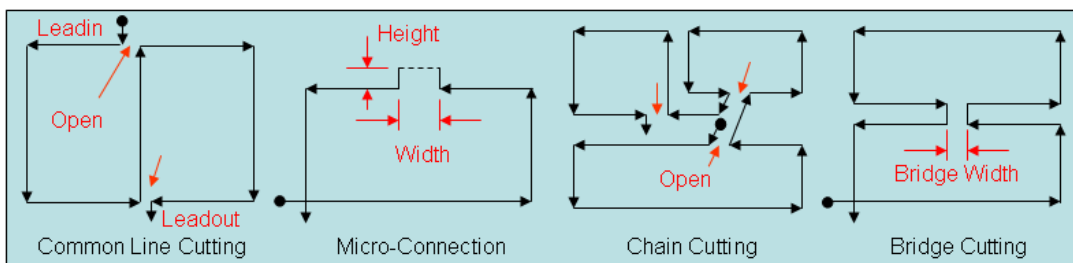
You can click **NEST MODE** to switch from nest mode to cut mode, and click **CUT MODE** to switch from cut mode to nest mode. In Nest Mode, the graphics in plate is displayed as parts; In Cut Mode, the graphics in plate is displayed as cutting path with sequenced number, piercing point and cutting direction.

### There are two kinds of cutting path in SmartNest:

- **Normal cutting path:** A normal cutting path comes from a contour of a part, where each part is cut according to its contours in order. The task of generating normal cutting path is to determine the cutting sequence for all parts on the plate, as well as each contour's piercing point, leadin/leadout and cutting direction (close-wise or anti-clock-wise). In such case, a cutting path is called a "**contour**", which should be always closed.
- **Special cutting path:** In some cases, the rulers for normal cutting path may not be obeyed, where a cutting path may be changed from a contour, or generated across several parts or contours. Such a special cutting path is called a "**trace**", which may be closed or open.

### In the following four cases, special cutting path will be applie

- ▶ Common line cutting
- ▶ Micro-connection cutting
- ▶ Chain cutting
- ▶ Bridge cutting



### Note:


1 Special cutting path is implemented only through trace transformation (see the next section "**Modifying cutting path**").

2 Since a plate is cut as either normal cutting path or special cutting path, some normal cutting paths (contours) might need to be transformed into traces for a complete cut.

## Kerf-Compensation

Due to the significant spot size of a cutting tool (e.g. the flame/plasma cutting torch), the cutter-diameter (i.e. the spot size of the torch) compensation needs to be taken into account in a cutting path so as to ensure the dimension precision of final parts. There are two different approaches to compensate the cutter diameter (kerf-compensation) in SmartNest. One approach is to automatically implement the compensation by the CNC control system via relevant preparatory NC codes (e.g.G41/G42) in the final CNC output; another approach is to appropriately offset the part contours prior to the generation of cutting path. We term the former '**hard-compensation**' whilst the latter '**soft-compensation**'.


For normal cutting path, either soft or hard-compensation can be applied; for special cutting path, however, only soft-compensation can be used. Prior to the generation of special cutting path, therefore, all part contours should be offset before they are

transformed into traces (by click the "Offset" button  in the main toolbar, and the offset value should be set in advance in the Normal Cut Setting).

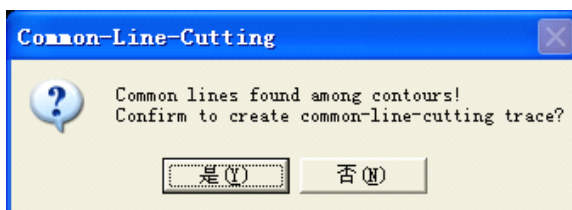
There are two ways to generate cutting path: Automatic and interactive. Automatic generation of cutting path is effective for normal cutting path, as well as common line cutting in special cutting path. Except common line cutting, other special cutting path must be implemented in interactive manner.

## Automatic generation of cutting path

1 Edit the "**Normal Cut**" setting for normal cutting path (if necessary, edit the "**Special Cut**" setting for common line cutting).

2 Click "Path" button  in the main toolbar to automatically generate cutting path. If no common lines among contours found, the following step 3 and step 4 will be skipped.

3 If common lines found among contours, a prompt will appear as follows for your decision:



4 Click "Yes" to create common line cutting trace (special cutting path); Click "No" to




ignore common lines and generate normal cutting path.

## Modifying cutting path


Once you have generated cutting path automatically, you are free to modify the path in any way. You can re-arrange the cutting order, change the piercing point, leadin/out and direction of a contour/trace. This section of the guide will showcase the ways of modifying cutting path.

### Re-arrange cutting order


- 1 Edit the "Normal Cut" setting for sequencing range (for all objects or partial objects) and sequencing object type (part or contour).

- 2 Click "Order" button  in the main toolbar to start sequencing.
- 3 Click an object (part/contour/trace) as the next path in order. The selected object will be numbered in order and displayed in red color.


### Change piercing point (only for contours)

- 1 Click "Pierce" button  in the main toolbar to start.
- 2 Select a contour to change. The selected contour will be highlighted.
- 3 Click a specific point on the contour. This point will be defined as the new piercing point, at which a new leadin/out may be added if the contour has a leadin/out before.
- 4 If there are more than one the same kind contours on the plate, a batch processing prompt dialog will appear for your decision.

### Change leadin/out

- 1 Click "Lead" button  in the main toolbar to start.
- 2 Select an object (contour/trace) to change.
- 3 Drag to define a new linear leadin/out for the selected object, the length of the adding leadin/out will be displayed meanwhile.

### Change direction

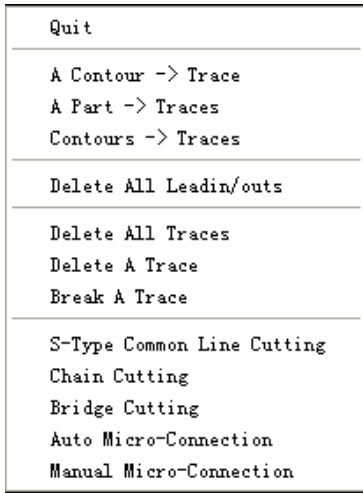
- 1 Click "Direct" button  in the main toolbar to start.
- 2 Select an object (contour/trace) to change. The selected object will be highlighted.
- 3 Click the object to reverse its direction.
- 4 For normal cutting path, if there are more than one the same kind contours on the plate, a batch processing prompt dialog will appear for your decision.

## Transform contour into trace

As mentioned before, a plate is cut as either normal cutting path or special cutting path. If there is any special path on the plate, the other normal paths should be transformed into

special ones as well for a complete cut. More important, special cutting paths are implemented only through trace transformation.

Right-click to popup menu as follows to reach more operations for transformation.



▶ **A Contour→Trace**

Transform a contour to trace, during which the common line cutting path may be generated if there exist common lines between this contour and its adjacent traces.

▶ **A Parts→Trace**

Transform all contours of a part to traces, during which the common line cutting path may be generated if there exist common lines between this part and its adjacent traces.

▶ **Contours→Traces**

Transform multiple contours to traces, during which the common line cutting path may be generated if there exist common lines between these contours and their adjacent traces.

▶ **S-Type Common Line Cutting**

Transform two adjacent contours with a common line into one cutting path.

▶ **Chain Cutting**

Transform several adjacent contours into one trace by connecting them with transitional auxiliary cutting path.

▶ **Bridge Cutting**

Add a contour to an existed trace by bridging the trace with the contour. Note that the first pier should be a trace and the second pier should be a contour.

▶ **Auto Micro-Connection**

Transform a contour into a trace, on which same micro-connections are added according to the Special Cut Setting.

▶ **Manual Micro-Connection**

Add same specific micro-connections on an existed trace by mouse clicking.


**Note:**

Mixed special cutting paths can be obtained by trace transformation mentioned above.

## Cut simulation

Before generating output, it is often convenient to see how a nest will be cut. Cut simulation presents an animation that approximates how a nest would be cut by your machine. SmartNest allows simple control over the simulation, similar to playing a movie.

### To view cut simulation for the current nest:

- ▶ Click "Stimu" button  in the main toolbar, and the cut simulation toolbar will appear.



### To play the simulation continuously or step-by-step:

- ▶ On the Simulation toolbar, click the Continuous or Step button. The stimulated cutting path will draw with thick lines in red color.

### To pause the simulation:

- ▶ On the Simulation toolbar, click the Pause button.

### To go on the simulation paused:

- ▶ On the Simulation toolbar, click the Go On button.

### To restart the simulation from beginning:

- ▶ On the Simulation toolbar, click the Restart button.


### To quit cut simulation and return to normal nesting:

- ▶ On the Simulation toolbar, click End.

## Saving and opening jobs

Often you will want to save your work so you can return to it at a later time. The exact state of your job (including all plates) can be saved in a job file. SmartNest jobs have the extension: **.smt**.


### To save a job:

- 1 In the main toolbar, click "Save" or "Save..." button . If the job is untitled, a Save File dialog will appear, otherwise the updated job will be saved.
- 2 Browse to the appropriate folder for your job.
- 3 In the **File name** box, type the name for your job file.
- 4 Click **Save**.

The current job will be saved with the name you specified. The file name will be displayed on the top of the window.



### To open a job:

- 1 In the main toolbar, click "Open" button . The **Open File** dialog will appear. Use this dialog to browse to the folder containing the job you want to open.
- 2 Select the job file you want to open.
- 3 Click **Open**.


### Note:

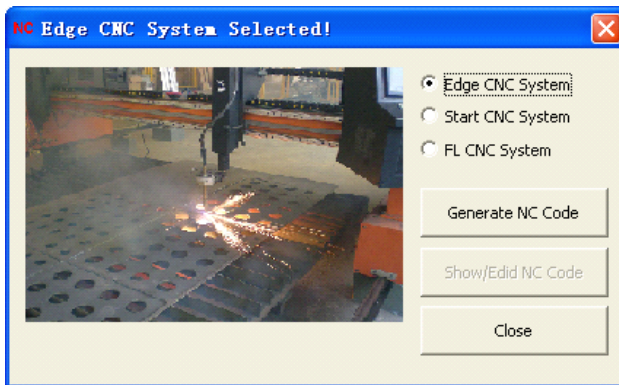
A nest in .dxf/.dwg file can be opened as a job for later processing in SmartNest. If succeed in opening, the nest as .dxf/.dwg file will be loaded, meanwhile each part included in the file will be separated out and added in the Part List.

## Output

Ultimately, the purpose of any SmartNest job is to generate correct output for your machine controller. When a job is ready for this step, CNC output can be generated.


### To create CNC output for the current job:

- 1 Click "NC Code" button  in the main toolbar.  
The Output CNC dialog will open. Use this dialog to select the CNC system type for the output of NC code file.



- 2 In the Output CNC dialog, click to select a CNC system type.
- 3 Click **Generate NC Code** to output the NC code file (as NC-Programming Setting).
- 4 Click **Show/Edit NC Code** to show/edit the NC codes (if necessary).

### To create DXF output for the current job:

- 1 Click "DXF File" button  in the main toolbar.  
The DXF Output dialog will open. Use this dialog to select the file name for the output file.
- 2 In the **File name** box, type a name for your dxf output file.
- 3 Click **Save**.

#### Note:

- 1 SmartNest will generate a CNC/DXF file for each nest in your job, creating a unique file name that is based on the file name you chose. These CNC/DXF files would then be sent to your machine controller.
- 2 Kerf-compensation needs to be considered in the output. For CNC output, either soft or hard-compensation can be used. For DXF output, however, only soft -compensation can be applied.

## Report

At any time you can view and print reports for your current job.

### To open the Print dialog:



- In the main toolbar, click "Print" button

The Reports dialog will open, showing the report for current nest.

File Name			Nest and Part List			Plate Size	Util. Ratio	1 Pgs
demo.snt						4000x2000x10.0	60.1%	Pg. 1
No	Part ID	Quan.	No	Part ID	Quan.	No	Part ID	Quan.
1	78210-0706-N7	1	11	78210-0706-M4	1	21	78210-0707-N10	1
2	78210-0747-N1	1	12	78210-0707-M4	1			
3	78210-0736-N10	1	13	78210-0736-N24	1			
4	78210-0735-N10	1	14	78210-0735-N24	1			
5	78210-0713-N3	1	15	78210-0736-M13	1			
6	CI-111288-N1	1	16	78210-0735-M13	1			
7	78210-0706-M13	1	17	78210-0736-M4	1			
8	78210-0707-M13	1	18	78210-0736-M12	1			
9	78210-0735-N27	1	19	78210-0735-M12	1			
10	78210-0735-M15	1	20	78210-0706-M10	1			

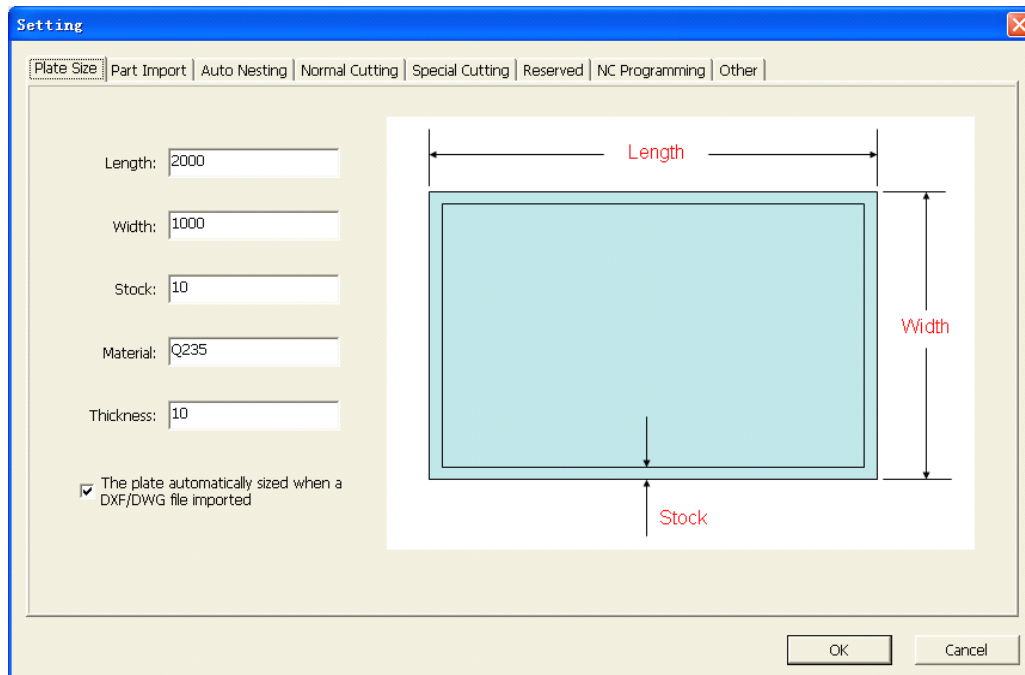
  

[SmartNest]

## Setting

Click on the main toolbar "Set" button, or use the shortcut key "S" key to enter GoldenLaser metal nesting software Parameter setting interface, the following parameters were introduced each section of the specific meaning.

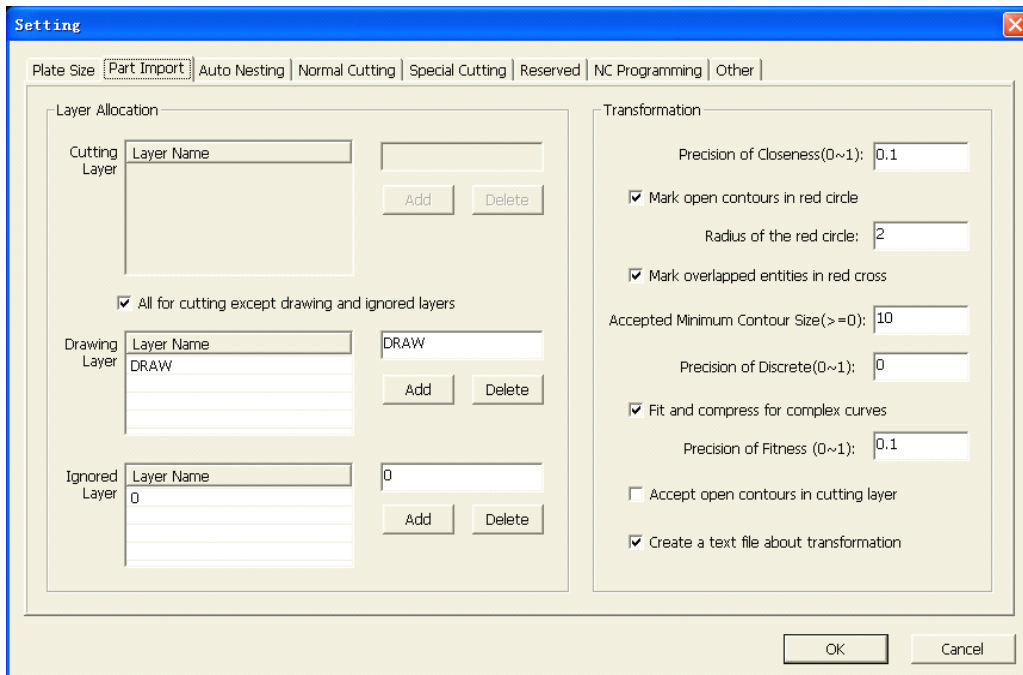
### Plate Size Setting



- **Length:** the length of plate
- **Width:** the width of plate
- **Stock:** the reserve margin of plate when automatic nesting
- **Material:** the material of plate.
- **Thickness:** the thickness of plate.
- **The plate automatically sized when a DXF/DWG file imported:** system customs the plate's size when opening the DXF / DWG file.



## Part Import Setting



Entering the interface and setting related parameters before importing parts, if unsuccessful, you can read the following explanation, then re-setting and re-importing.

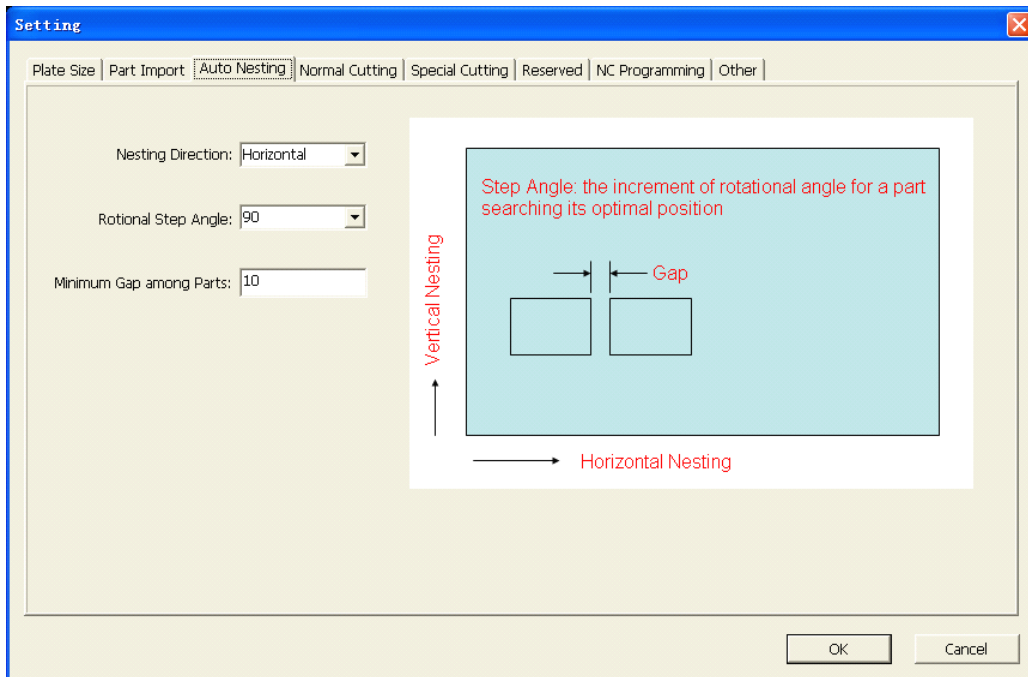
- (1) **Layer Allocation**, Redistribution the layer located the original CAD graphics to specified layer:
  - **Cutting layer:** For the actual cutting (default is closed).
  - **Drawing layer:** For the dusting dash (may not be closed).
  - **Ignored layer:** Graphics are ignored, without any treatment.
- (2) **Precision of closeness (0 to 1):** The determine parameters of dealing with non-closed contours. The smaller closed accuracy, the more accurate. Contours closing or not is in terms of some range of accuracy, if too high, you can cut down.
- (3) **Mark open contours in red circle:** Checking, the part not closed is marked with a red circle with a cross symbol. The size refers to the radius of the red circle.
- (4) **Mark overlapped entities in red cross:** If there are overlap lines, they are marked with a red cross.
- (5) **Accepted Minimum Contour Size(> = 0):** The contours are ignored if they are smaller than the smallest parameters.
- (6) **Precision of Discrete (0 to 1):** Precision of Discrete is used to control the length and number of small segments. The higher accuracy, the shorter length and greater number. Precision of Discrete should be controled in the range 0 to 1.
- (7) **Fit and compress for complex curves:** Compressing the original complex graphics, and improving the cutting quality (improve the smoothness). Precision of Fitness (0 to 1): The smaller parameters, the higher accuracy, then the cutting is more accurate.
- (8) **Accept open contours in cutting layer:** Checking this option if needing to import the not closed entities. Default is no checking.
- (9) **Create a text file about transformation:** Checking this option and generating a

---

Notebook graphics processing message automatically.

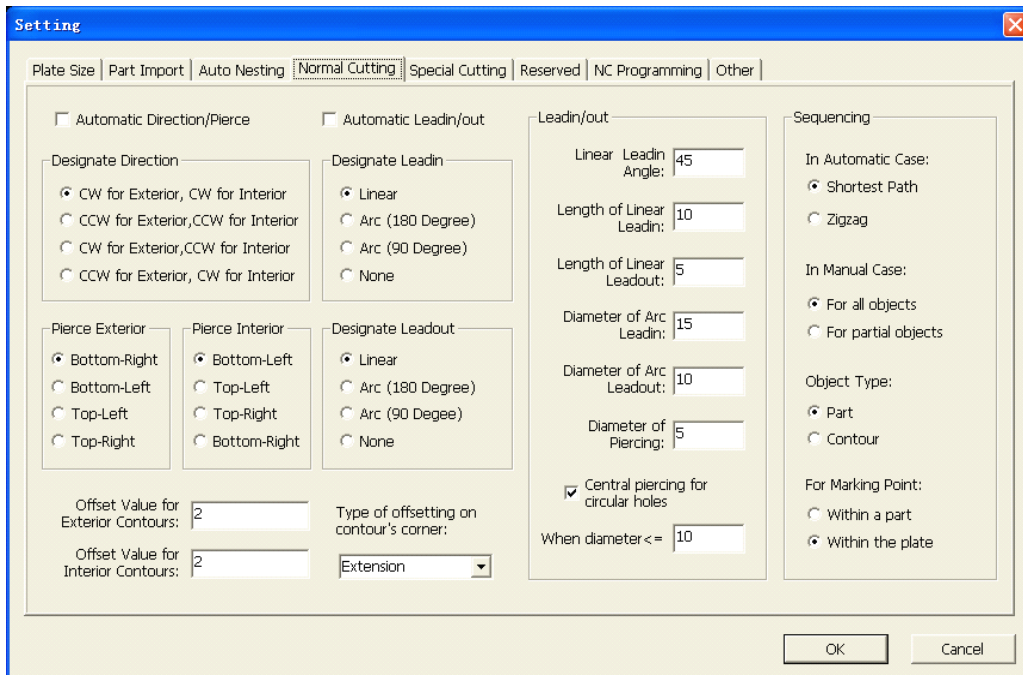
**Note:** If checking the "Mark open contours" or "Marked overlapped entities" and they are exist in original CAD drawing, then generating a CAD file containing "tagged". Users can open the file to observe and modify.

## Auto Nesting Setting



- **Nesting Direction:** Three kinds of nesting mode for choices.
  - Horizontal:** breadth-first;
  - Vertical:** length first;
  - Automatic:** System defining the direction of nesting automatically.
- **Rotational Step Angle:** The rotation of each part during the course of automatic nesting.
- **Minimum Gap among Parts:** The minimum distance between two parts.

## Normal Cut Setting



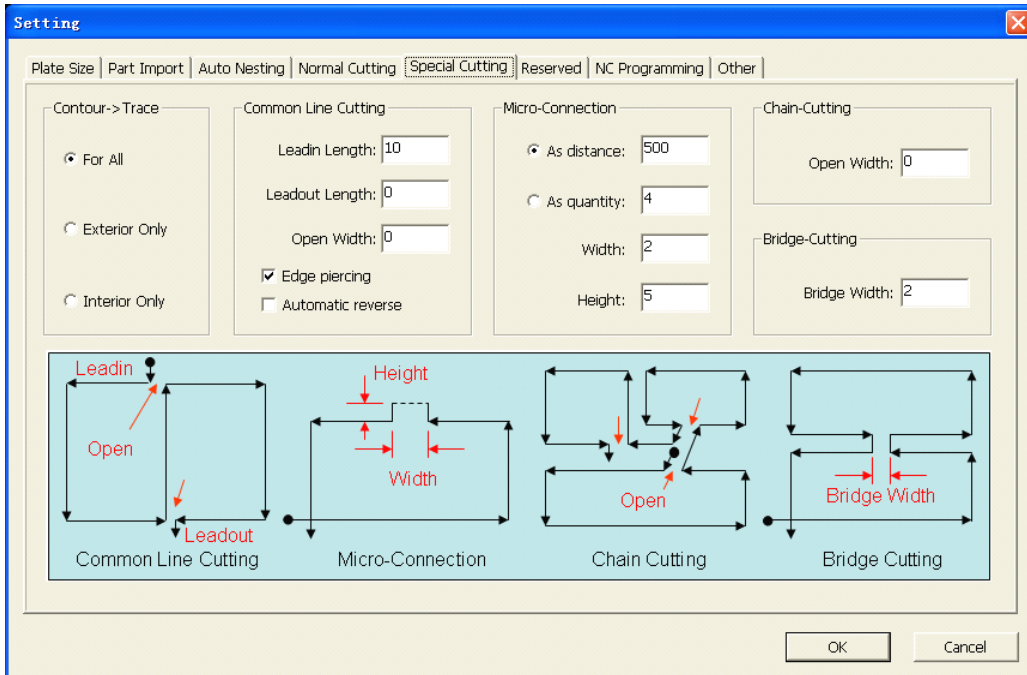
### (1) Cutting process

- **Automatic Direction/Pierce:** System setting the direction and starting point for all contours automatically. Default is checking. Users also can custom the direction and starting point by unchecking.
- **Automatic Leadin/out:** System setting the leadin/out for all contours automatically according to parameters. Users also can custom the leadin/out by unchecking.
- **Linear Leadin Angle:** Setting the angle of leadin/out, only for straight line.
- **Length of Linear Leadin/Leadout:** The length of contours cutting linear leadin/out.
- **Diameter of Arc Leadin/Leadout:** The diameter of contours cutting arc leadin/out.
- **Diameter of Piercing:** The perforation diameter of cutting linear or arc leadin/out
- **Central piercing for circular holes(When diameter  $\leq 10$ ):** The size of perforation diameter on circle center.

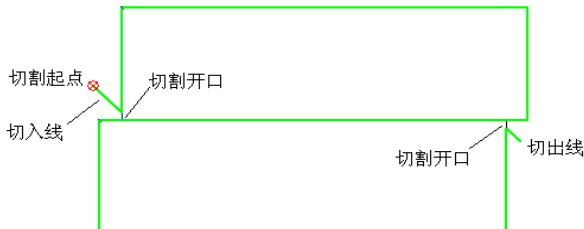
### (2) Cutting sequence

- **In Automatic Case:** In connection with the sequence in unit of contours.
- **In Manual Case:** Dividing into "all sequence " and "partial sequence ". The former for all parts or contours, and the latter for some parts or contours.
- **Object Type:** Dividing into "parts" and "contours".
- **For Marking Point:** Optimizing the order of marking.

## Special Cut Setting



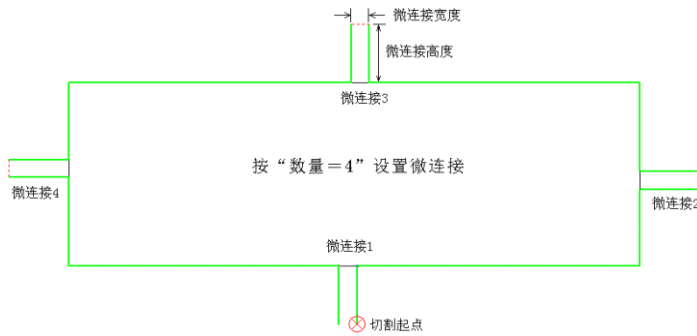
- **Contour → Track:** For all: All the contours turning into green tracks;  
Exterior Only: Only the outer contours turning into green tracks;  
Interior Only: Only the inter contours turning into green tracks;
- **Common Line Cutting:**
  - ◇ Leadin Length: The length of auxiliary cutting-in line.
  - ◇ Leadout Length: The length of auxiliary cutting-out line.
  - ◇ Open Width: The size of the opening where continuous cutting between two contours.
  - ◇ Edge piercing: Automatically generating common line cutting tracks taking the way of edge piercing.
  - ◇ Automatic reverse: Automatically reversing the generated tracks according to the needs of perforation location.



**[Note]** Lead in/out line parameter setting is only effective for S-type common line cutting.

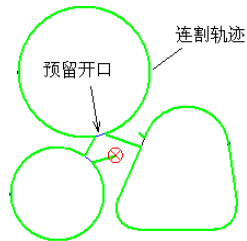
- **Micro-Connection:**
  - ◇ As distance: The distance value when setting "Set the micro-connection by distance".
  - ◇ As quantity: The number value when setting "Set the micro-connection by number".

- ◇ Width: Setting the width of micro-connection.
- ◇ Height: Setting the height of micro-connection.



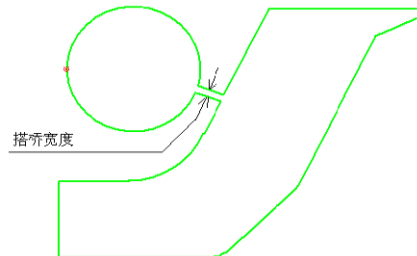
### ● Chain-Cutting:

- ◇ Open Width: The opening width of each chain-cutting contour.



### ● Bridge-Cutting:

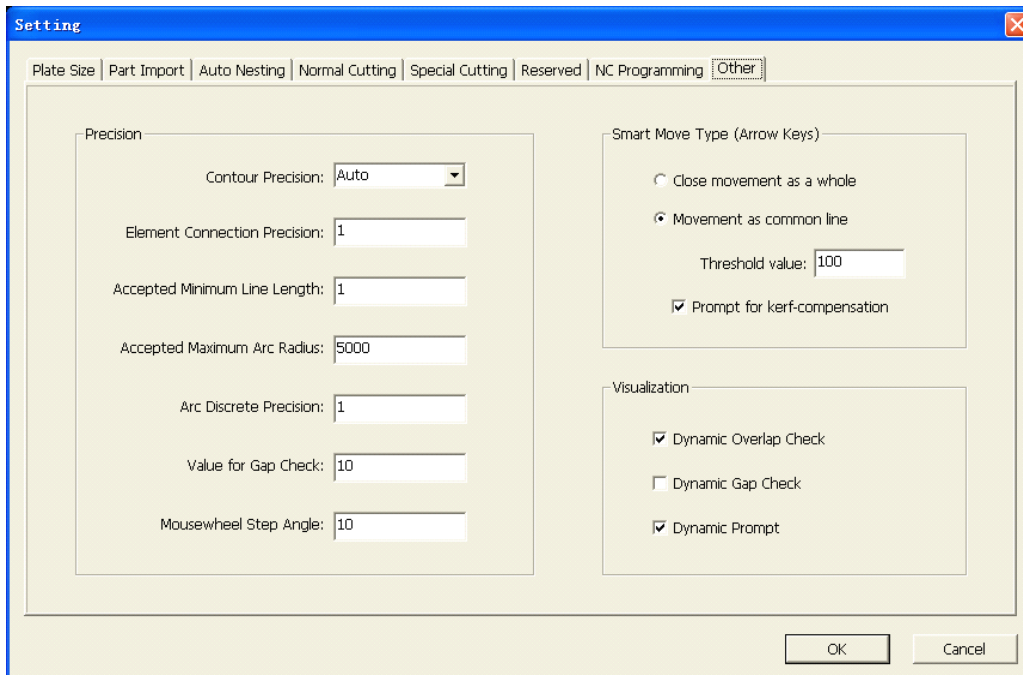
- ◇ Bridge Width: The bridge width where bridge cutting.



## NC Programming Setting

- **NC Number:** NC code's program number.
- **Cutting Speed:** integer value, the unit is mm / min, default is 1000mm/min.
- **Origin:** The origin of coordinate when automatic programming, four options for choice (Bottom-Left, Top-Left, Top-Right and Bottom-Right).
- **G92:** The point of knife relating to the coordinates of coordinate origin, corresponding to the X, Y value in G92 command.
- **G90/G91:** There are "Absolute" and "Relative" to choose.
- **G41/G42:** The setting of CNC system's compensation switch.  
Kerf compensation value: When the kerf compensation is "on", setting is effectively.  
Each code's value is defined by CNC system.
- **M-Code Definition:** Custom the M code in NC programming.

## Other Setting



- **Contour Precision:** Setting the connection accuracy between contour elements (or closed accuracy).
- **Element Connection Precision:** The accuracy of contours operating, range is from 0 to 1.
- **Accepted Minimum Line Length:** The minimum straight cutting is 1.
- **Accepted Maximum Arc Radius:** The maximum cutting radius, default is 5000.
- **Arc Discrete Precision:** The accuracy of small segments which large arc separating into, default is 1.
- **Value for Gap Check:** Checking the distance between parts automatically.
- **Mousewheel Step Angle:** Setting the angle when mouse whirling parts.
- **Smart Move Type (Arrow keys):** Switching the mode of part moving, equivalent to "Tab" key. The bottom-right appearing prompt text. **Threshold value:** No common line in the case of less than this value. **Prompt for kerf-compensation:** System popping up tips for kerf-compensation or not automatically.
- **Dynamic Overlap Check:** Checking the parts' dynamic overlap or not in nesting (marking in red).
- **Dynamic Gap Check:** Checking the parts' dynamic gap or not in nesting (marking in red).
- **Dynamic Prompt:** The message moving with cursor, and same to the tips on bottom-left.



## **Contacting Zhige Software, Co.,Ltd**

Wuhan Zhige Software, Co.,Ltd.  
B-2503 Valley Times Square, Guanshan Street,  
Wuhan City, Hubei Province, P.R.China,430074  
<http://www.smartnest.com.cn>  
E-mail: [smartnest@163.com](mailto:smartnest@163.com)  
Tel: 0086-27-87778672,87490006  
Fax: 0086-27-87778672